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REMARKS

Claims 1 and 10 have been amended to remove cerium (Ce) and lanthanum (La) from the group of selected metals which are impregnated onto the catalyst support in the present invention.

Claim Rejections-35 U.S.C. §103(a)

The Examiner rejected claims 1-4, 9-12, 14-22, 24 and 27-33 of the present invention under 35 U.S.C. §103(a) as being obvious in view of Mitchell (USP 5,292,705) combined with Clark et al.(USP 5,071,538).

Mitchell teaches the activation or super activation of a fresh, reduced hydrocarbon synthesis catalyst in the presence of hydrocarbon containing liquids. The activation process of this patent is effected by treating an already reduced catalyst with a hydrogen-containing gas in order to increase the activity of the catalyst above the reduced state.

Clark is directed to the regeneration of a hydroprocessing catalyst by impregnation with a rare earth metal, followed by a decoking step.

The present invention teaches a process for regenerating a used metal catalyst by first decreasing the hydrocarbon content of the used catalyst, followed by calcining under an oxidant-containing atmosphere, further followed by impregnation with a solution of a metal, then calcining the impregnated catalyst, and finally reducing with a hydrogen-containing gas.

The Examiner stated that it would have been obvious to one of ordinary skill in the art to modify the teachings of Mitchell, by calcining the spent catalyst before promoter impregnation since Clark et al. teaches such a step. The applicant submits, however, that one

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of ordinary skill in the art would not be motivated to combine the cited references, and further that the combined references do not teach all the limitations of the present invention.

Mitchell is directed to the activation of a fresh catalyst, not the regeneration of a spent catalyst. In fact, Mitchell explicitly states that the process of his invention is directed to an activation process, not regeneration. In col. 1, lines 33-35 of Mitchell, he states that his process is for an "essentially fresh, i.e. unused, catalyst". A person of skill in the art is aware of the different chemistries and properties involved when dealing with a used versus unused catalyst, and the person of skill would consider these differences significant. Thus, a person of skill in the art would not be motivated to apply the teachings of a catalyst activation process to a catalyst regeneration process. Consequently, there would be no motivation to combine Mitchell with Clark.

Clark, on the other hand, does deal with a catalyst regeneration process. However, Clark teaches regenerating a hydroprocessing catalyst, while applicants teach regenerating a carbon monoxide hydrogenation catalyst, i.e. Fischer-Tropsch synthesis. To this end, the present invention teaches the addition of metals that are active for the promotion of the Fischer-Tropsch reaction. In Clark, the rare earth metals that are added by his process are inactive for hydroprocessing, nor do they promote hydroprocessing reactions. Rather, the aim of Clark is to add the rare earth metals to improve certain reactions and processes that occur during regeneration of the hydroprocessing catalyst. Specifically, the impregnated metal acts as an oxidation catalyst to enhance the oxidation of the most refractory coke on the catalyst during the second decoking. Because Clark is directed to regenerating a hydroprocessing catalyst, and the metals added by his process do not promote the hydroprocessing reaction, one

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of ordinary skill in the art would not be motivated to apply the teaching of Clark to a regeneration of a CO hydrogenation catalyst process.

Moreover, applicants have amended claims 1 and 10 to remove the rare earth metals Ce and La. The present application no longer claims any of the metals disclosed by Clark. Therefore, all of the limitations of the present invention are not taught by the combination of Mitchell and Clark.

The Examiner also rejected claim 5 in view of Mitchell, Clark and further in view of Mitchell (USP 5,283,216); claims 8 and 23 in view of Mitchell '705, Clark and further in view of Clerici et al (USP 6,121,333); claim 13 in view of Mitchell '705, Clark and further in view of Nay (USP 5,728,918); and claims 25 and 26 in view of Mitchell '705, Clark and further in view of Benham (WO 98/27181). Because the foregoing rejections are all fundamentally based on Mitchell '705 and Clark, the applicant asserts the arguments presented herein to these rejections. Therefore, because the rejections based on Mitchell '705 combined with Clark fail for the foregoing reasons, there is no need to further address these rejections.

Based on the reasons stated above, a person of ordinary skill in the art would not be motivated to combine the cited references to achieve the present invention. Furthermore, the references as combined do not teach all of the limitations of the present invention. Therefore, the claims are patentable over the prior art, and the applicants respectfully request that the rejections under 35 U.S.C. §103(a) be withdrawn.

Applicants believe that the claims are patentable and that this application is in condition for allowance and such favorable action is respectfully requested. If any questions or issues

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remain, the resolution of which the Examiner feels would be advanced by a conference, he is invited to contact Applicants' attorney at the telephone number noted below.

Respectfully submitted,



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☒ Pursuant to 37 CFR 1.34(a)

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